

**ABSTRACT**

A process for fabrication of a semiconductor device including an ONO structure, comprising forming the ONO structure by providing a semiconductor substrate having a silicon surface; forming a first oxide layer on the silicon surface; depositing a silicon nitride layer on the first oxide layer; and forming a top oxide layer on the silicon nitride layer, wherein the top oxide layer is formed by an in-situ steam generation oxidation of a surface of the silicon nitride layer. The semiconductor device may be, e.g., a SONOS two-bit EEPROM device or a floating gate FLASH device including an ONO structure.

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